US Army Corps of Engineers

Air Force Center for Engineering and the Environment

Seneca Army Depot Activity
Romulus, New York

PROPOSED PLAN

TWO AREAS OF CONCERN (AOCs) REQUIRING LAND USE CONTROLS (LUCs) SWMUs SEAD-121C, THE DEFENSE REUTILIZATION AND MARKETING OFFICE YARD, AND SEAD-121I, THE RUMORED COSMOLINE OIL DISPOSAL AREA SENECA ARMY DEPOT ACTIVITY

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Proposed Plan

Two Areas of Concern (AOCs) Requiring Land Use Controls (LUCs), SWMUs SEAD-121C, the Defense Reutilization and Marketing Office (DRMO) Yard, and SEAD-121I, the Rumored Cosmoline Oil Disposal Area at the SENECA ARMY DEPOT ACTIVITY (SEDA) Romulus, New York

January 2008

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PURPOSE OF THE PROPOSED PLAN

This Proposed Plan describes the remedial alternative selected for two areas of concern (AOCs), SEAD-121C (the former Defense Reutilization and Marketing Office [DRMO] Yard) and SEAD-121I (the Rumored Cosmoline Oil Disposal Area) at the Seneca Army Depot Activity (SEDA or Depot) Superfund Site, located in Seneca County, New York. This Proposed Plan was developed by the U.S. Army (Army) in consultation with the U.S. Environmental Protection Agency (EPA) and the New York State Department of Environmental Conservation (NYSDEC). The Army is issuing this Proposed Plan as part of their public participation responsibilities under Section 117(a) of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) of 1980, as amended, and Sections 300.430(f) and 300.435(c) of the National Oil and Hazardous Substances Pollution Contingency Plan (NCP). The nature and extent of the contamination at the two AOCs is described in the April 2006 Remedial Investigation (RI) Report and the November 2007 Construction Completion Report (CCR). The Army, EPA, and NYSDEC encourage the public to review these documents to gain a more comprehensive understanding of the AOCs, the site and the Superfund activities that have been completed.

This Proposed Plan is being provided as a supplement to the RI and CCR Reports to inform the public of the Army's preferred remedies for the AOCs and to solicit public comments pertinent to the selected remedies. The preferred remedy for both AOCs includes provisions to formally impose and implement Land Use Controls (LUCs) that prohibit the use of the designated land for residential activities, and to prohibit access to and use of groundwater.

The identified LUCs were previously established for three other AOCs (i.e., SEADs 27, 64A, and 66) that are located in proximity to SEADs 121C and 121I. At the time of the final determination for the other three SEADs, all parties agreed that the identified LUCs should be imposed on all land within the Planned Industrial / Office-Development and Warehousing (PID) Area at the former Depot due to the anticipated future use of the land and the similarity of its known past uses by the Army.

The remedies described in this Proposed Plan are the preferred remedy for each of the AOCs. Changes to the preferred remedy, or a change from the preferred remedy to another remedy, may be made if public comments or additional data indicate that such a change will result in a more appropriate remedial action. The final decision regarding the selected remedies will be made after the Army and the EPA have taken all public comments into consideration. The Army is soliciting comments because the Army and EPA may select a remedy other that the preferred remedy for either or both of the AOCs.

MARK YOUR CALENDAR

January 14, 2008 – February 12, 2008:
Public comment period related to this Proposed Plan.

January 29, 2008 at **7:00 P.M.**: Public meeting at the Seneca County Office Building, Village of Waterloo New York, Heroes Conference Room.

COMMUNITY ROLE IN SELECTION PROCESS

The Army, EPA, and NYSDEC rely on public input to ensure that the concerns of the community are considered in selecting an effective remedy for each Superfund site. To this end, the RI and CCR Reports and this proposed plan have been made available to the public for a public comment period which begins on January 14, 2008 and concludes on February 12, 2008.

A public meeting will be held during the public comment period at the Seneca County Office Building, Heroes Conference Room on January 29, 2008 at 7:00 p.m. to present the conclusions of the RI and the construction activities performed, to elaborate further on the reasons for selecting the preferred remedies, and to receive public comments.

Comments received at the public meeting, as well as written comments, will be documented in the Responsiveness Summary Section of the Record of Decision (ROD), the document that formalizes the selection of the remedy for the AOCs.

Written comments on the Proposed Plan should be addressed to:

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BRAC Environmental Coordinator
Seneca Army Depot Activity
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SCOPE AND ROLE OF ACTION

The primary goal of these actions is to enable the Army to transfer or lease the land occupied by the identified AOCs to other private or public parties for beneficial reuse. The historic use of this land was industrial and warehousing. The planned future use for the land in these AOCs is Planned Industrial/Office-Development/Warehousing, and these uses are consistent with the Town of Romulus' current zoning of the land within the PID Area.

Prior to transfer or lease of any property at the SEDA, the Army is required to ensure that the property is suitable for reuse. Information exists for SEADs 121C and 121I that indicates that hazardous substances are still present at these AOCs at concentrations that potentially pose risks to selected populations. At SEAD-121C, a risk assessment based on exposure scenarios that are consistent with the planned future use of the land in the AOC indicates that such uses are possible and appropriate given the residual levels of hazardous substances that remain at the AOC. At SEAD-121I, a risk assessment indicates that an elevated level of non-cancer risk exists due to the presence of metals in the soil. The primary metals responsible for the identified risk were associated with strategic stockpiles of ore that were previously staged within the AOC.

Although risks estimated for SEAD-121C are acceptable for industrial occupants, the EPA requested that lead contaminated soil at levels exceeding 1,500 mg/Kg be removed to enhance the overall acceptability of the area. The lead cleanup objectives that were established for SEAD-121C were that the 95^{th} upper confidence limit (95^{th} UCL) of the mean for samples collected from the area of the excavation would not exceed 1,250 mg/Kg, and that no individual sample would contain a lead concentration of more than 1,500 mg/Kg.

Once the Government's strategic stockpile mission was terminated at SEAD-121I, the Army also performed a mission termination cleanup action in the areas where the stockpiles were previously located. The cleanup objectives established for this work were that the 95^{th}

UCL of the mean for manganese in the area of the former stockpiles of ore would not exceed 10,000 mg/Kg, and that no individual sample would contain manganese at a level greater than 19,500 mg/Kg. Additionally, the 95th UCL of the mean for iron would not exceed 100,000 mg/Kg at the former stockpile locations.

Based on these findings and actions, it was determined that formally imposing LUCs already established for the greater PID Area, which prohibit residential activities, and prohibit access to and use of groundwater, is an appropriate measure to minimize any potential future health and environmental impacts at both AOCs.

SITE BACKGROUND

Site and AOC Descriptions

The SEDA previously occupied approximately 10,600 acres of land located in the Towns of Varick and Romulus in Seneca County, New York. The former military facility was owned by the U.S. Government and operated by the Army between 1941 and approximately 2000, when SEDA's military mission ceased. Prior to the Army's occupation of the land, this land was used for farming, agricultural and residential purposes. The SEDA's historic military mission included receipt, storage, distribution, maintenance, and demilitarization of general supplies, conventional ammunition, explosives and special weapons.

SEDA is located in an uplands area, which forms a divide that separates two of New York's Finger Lakes; Cayuga Lake on the east and Seneca Lake on the west. Ground surface elevations are generally higher along the eastern and southern borders of the Depot, and lower along the northern and western borders. The approximate elevation at the southeastern corner of the SEDA site is 740 feet (ft, National Geodetic Vertical Datum 1929 [NGVD 1929]), while the approximate elevation at the southwestern and northeastern corners is 650 ft (NGVD 1929). The approximate elevation at the southwestern corner of the Depot is 590 ft (NGVD 1929). Given this topographic profile, the primary direction of surface water flow throughout the SEDA is to the west towards Seneca Lake. Isolated portions of the Depot drain to the northeast (Seneca-Cayuga Canal) and east (Cayuga Lake). Primary surface water flow conduits to Seneca Lake are Reeder, Kendaia, Indian, and Silver Creeks, while Kendig Creek flows to the northeast and an unnamed creek flows away from the southeast corner of the Depot towards Cayuga Lake in the east. Comparably, the predominant groundwater flow direction is to the west and southwest, although local variations exist at specific locations throughout the Depot.

SEAD-121C and SEAD-121I are both located in the east-central portion of the former SEDA. Both AOCs are within the greater PID and Warehousing Area. Both AOCs are located at elevations greater than 720 ft (NGVD 1929). The location of SEAD-121C and SEAD-121I within the Depot are shown on **Figure 1**.

SEAD-121C, the former DRMO Yard

SEAD-121C is a triangularly-shaped gravel lot, approximately 8.75 acres in size, located roughly 4,000 ft southwest of the former Depot's main entrance off State Route 96. The DRMO Yard is surrounded by a chain-linked fence and access into the AOC is controlled through a single, normally locked gate located at its southeast corner. The surface of the DRMO Yard is graded to allow surface water to drain towards the man-made ditches that bound the AOC on its northwest and south sides. The major pathway of surface water flow is to these drainage ditches, which then flow to the west towards a wetland area and the headwaters of Kendaia Creek.

Several other man-made features are prominent within the DRMO Yard; these include: one storage building; an earthen-bottomed, open storage cell in the southwest corner of the AOC; an elongated, segmented, rectangular-shaped, open concrete storage structure immediately adjacent to, and located halfway along the northwest perimeter fence of the AOC; and a multi-chambered, open storage cell adjacent to the east

perimeter fence, near the northern-most point of the DRMO Yard. This latter storage area sits between railroad tracks and is located in an area where broken asphalt pavement is present and intermixed with the earth.

The DRMO Yard was used by the Army to store material that was no longer needed for national defense, or that did not comply with legislative and regulatory requirements. The activity using the yard was responsible for property reuse (including resale), hazardous property disposal (off-site, at licensed/permitted facilities), precious metals recovery and recycling program support.

SEAD-121I, the Rumored Cosmoline Oil Disposal Area

SEAD-121I consists of four rectangular-shaped, open grass and dirt covered areas that are bounded by 3rd and 7th Streets (north and south ends, respectively) and Avenues C and D (west and east sides, respectively). The northern end of SEAD-121I is located roughly 4,500 ft south-southwest of the Depot's main entry off State Route 96. The AOC extends roughly 2,600 ft to the south from this point, and the AOC measures approximately 300 ft in width throughout its length; the overall size of the AOC is approximately 16.8 acres. Approximately 1.2 acres of this land was previously used for the staging of strategic stockpiles of ferro-manganese ore. This AOC is located 2,000 to 4,000 ft northwest of the topographic high point within the Depot.

Buried reinforced concrete storm drains convey runoff storm water from east to west through the AOC along 3rd St., 4th St., 5th St., 6th St., and 7th St.

A railroad spur line enters SEAD-121I from the south and extends to the northern end of the AOC where it terminates near the intersection of 3rd St. and Avenue C. Two sidings branch off the main spur line; one terminates in the first (north to south) block and the other terminates in the third (north to south) block. There are concrete loading docks located in the first and third blocks next to the railroad lines.

The Army indicates that the rail spur and sidings were used for delivery of equipment and machinery that was frequently packed in Cosmoline (oil). Cosmoline oil is a commonly used substance that prevents corrosion on metal parts and components. During delivery and unpacking of the equipment and machinery, oil from the packing may have been deposited on the ground.

The U.S. Government historically staged strategic stockpiles of ferro-manganese ore in portions of SEAD-121I, and these stockpiles were present during the EBS and RI sampling events and into the early part of 2007. These strategic stockpiles were located in the second and fourth blocks (north to south) of the AOC, along the western edge of the AOC close to Avenue C. The stockpile mission at SEAD-121I terminated in 2007 when the stockpiles were sold and removed, and the historic staging areas have had all ore residual removed.

Parallel rows of warehouses border the eastern and western sides of the AOC, across the bounding north-south running Avenue C and Avenue D.

Seneca Army Depot History

The U.S. Government purchased land for the Seneca Army Depot in Varick and Romulus, New York from approximately 150 families during June 1941. This land previously was used primarily for family homesteads, farming and agriculture. Once land was obtained, a work force numbering more than 7,000 at the peak of construction built the infrastructure of the Depot which included roads and rail lines; storage igloos; numerous buildings and structures that were used for administrative, maintenance, recreational, training, living, and support functions; and surrounded the entire facility with more than 20 miles of perimeter security fence, much of which was completed prior to the US's entry into World War II (WWII). The Depot began its primary mission of receipt, maintenance and supply of ammunition in 1943. After the end of WWII, the Depot's mission shifted from supply to storage, maintenance and disposal of ammunition.

On July 14, 1989, the EPA proposed the SEDA for inclusion on the National Priorities List (NPL). The EPA

recommendation was approved and finalized on August 30, 1990, when the SEDA was listed in Group 14 of the Federal Facilities portion of the NPL.

Once listed on the NPL, the Army, EPA, and NYSDEC identified 57 solid waste management units (SWMUs) where data or information suggested, or evidence existed to support, that hazardous substances or hazardous wastes had been handled and where releases to the environment may have occurred. Each of these sites was identified in the *Federal Facilities Agreement under CERCLA Section 120; Docket Number: II-CERCLA-FFA-00202* (FFA) signed by the three parties in 1993. The number of SWMUs was subsequently expanded to include 72 AOCs once the Army completed the required *SWMU Classification Report* in 1994.

The SEDA was a generator and treatment, storage and disposal facility (TSDF) for hazardous wastes and thus, subject to regulation under the Resource Conservation and Recovery Act (RCRA). Under the RCRA permit system, corrective action is required at all SWMUs, as needed. Remedial goals are the same for CERCLA and RCRA; thus, once the 72 SWMUs were listed, the Army recommended that they be identified as either areas requiring No Action or as Areas of Concern (AOCs). SWMUs listed as AOCs were scheduled for investigations based upon data and potential risks to the environment.

In 1995, the SEDA was designated for closure under the Department of Defense's (DoD's) 1995 Base Realignment and Closure (BRAC) process. In accordance with requirements of BRAC, the Army prepared an Environmental Baseline Survey (EBS) for SEDA. Under the EBS, all areas at the Depot were evaluated and subdivided into one of seven standard environmental categories consistent with the Community Environmental Response Facilitation Act (CERFA – Public Law 102-426) guidance and the DoD's *BRAC Cleanup Plan Guidebook* (DoD, 1993). Based on the findings and conclusions of the EBS, SEAD-121C and SEAD-121I were both designated as AOCs where additional information and data were required before the land could be offered for transfer and reuse.

Once SEDA was added to the 1995 BRAC list, the Army's primary objective expanded from performing remedial investigations and completing necessary remedial actions to include the release of non-affected portions of the Depot to the surrounding community for their reuse for other, non-military purposes (i.e., industrial, municipal, and residential). The designated future use of land within the SEDA was first defined and approved by the Seneca County Local Redevelopment Authority in 1996. The planned use for various portions of the SEDA has been modified by Seneca County Industrial Development Agency (SCIDA) since 1996.

Since 1995, approximately 8,000 acres of the former Depot has been released to the SCIDA. An additional 250 acres of land at the Depot has been transferred to the U.S. Coast Guard for continued operation of a LORAN[1] Station. Finally, other property still owned by the federal government has been leased to private parties for beneficial reuse.

PREVIOUS INVESTIGATIONS AND ACTIVITIES

Two environmental investigations were conducted at SEAD-121C and SEAD-121I to characterize conditions present. In addition, soil removal actions were performed at both of the AOCs during the summer of 2007.

The Army conducted a limited Environmental Baseline Survey (EBS) in 1998 and 1999 at each AOC to assess if hazardous substances were likely to be present. This work is summarized in the report *Final Investigation of Environmental Baseline Survey Non-Evaluated Sites [SEAD-119A, SEAD-122 (A, B, C, D, E), SEAD-123 (A, B, C, D, E, F), SEAD-46, SEAD-68, SEAD-120 (A, B, C, D, E, F, G, H, I, J), and SEAD-121 (A, B, C, D, E, F, G, H, I)].* Based on the results of the EBS, the Army subsequently conducted RIs at both AOCs during 2002 and 2003. The results of the RI are summarized in the report *Remedial Investigation Report for Two EBS Sites*

[1] LORAN – long range navigation

in the Planned Industrial Development Area (SEAD-121C and SEAD-121I. During these investigations, samples of soil (surface, subsurface, and ditch), surface water and groundwater were collected from one or both of the AOCs and analyzed for the full suite of Target Compound and Target Analyte List (TCL and TAL, respectively) parameters.

During the investigations, analytical data collected were compared to the prevailing state and federal standards and reference values. Cleanup levels and standards considered included New York's: Technical and Guidance Memorandum (TAGM) No. 94-HRW-4046 soil cleanup objectives; Class GA Groundwater Quality Standards; and, Class C Surface Water Ambient Water Quality Standards (AWQSs). Federal reference values considered included EPA Region IX Preliminary Remediation Goals (PRGs) for residential soils and PRGs for Tap Water, and Maximum Contaminant Limits (MCLs) for Drinking Water. The state's TAGM #4046 values for soil have recently been superseded by a new set of soil cleanup values including: protection of groundwater; protection of ecological resources; unrestricted use; and four levels of restricted use (i.e., residential, restricted residential, commercial, and industrial). State guidance for hazardous waste sites requires that response actions evaluated for possible implementation include the no action alternative, one that focuses on returning the location to pre-use conditions (i.e., unrestricted use), and others as may be appropriate.

During the prior investigations, it was determined that metals in the soil are the primary hazardous substances present at both of the AOCs. Concentrations identified for specific metals were shown to exceed identified cleanup objectives and reference values. Additionally, other selected organic chemicals have also been found at both AOCs at lower frequency, but at concentrations that exceed defined cleanup objectives and reference values. Finally, groundwater at SEAD-121C, and episodic surface water flows at both SEAD-121C and SEAD-121I have been shown to contain hazardous substances at concentrations that exceed state standards and federal reference values.

Specific hazardous substances of concern at SEAD-121C include benzene; the seven carcinogenic polycyclic aromatic hydrocarbons (cPAHs); dieldrin; three Aroclor congeners (1242, 1254, and 1260); and the metals arsenic, copper, lead, and iron. Hazardous substances identified at SEAD-121I include the seven cPAHs; dieldrin and heptachlor epoxide; and the metals arsenic, chromium, iron, manganese, and thallium.

During the summer of 2007, removal actions were performed at both SEAD-121C and SEAD-121. As is indicated above, the focus of the removal action at SEAD-121C was to eliminate samples containing lead concentrations in excess of 1,500 mg/Kg and to achieve an excavation area wide 95th UCL of the mean of 1,250 mg/Kg. At SEAD-121I, the goal of the ore pile cleanup was to remove residual ore and achieve a 95th UCL residual manganese concentration in soil of less than 10,000 mg/Kg for the excavation areas with no individual sample exceeding a value of 19,500 mg/Kg, and a 95th UCL residual iron concentration in soil of less than 100,000 mg/Kg. Confirmatory soil samples were collected at each area during the removal actions, and they were analyzed only for the metals of specific interest. The results of the confirmatory sampling and analysis are provided in **Table 2** and **6**, below.

SEAD-121C, the DRMO Yard

Soil Investigations

Hazardous substances found in the soil at SEAD-121C, the DRMO Yard after the EBS and RI are listed and compared to applicable state and federal cleanup objectives in **Table 1**. This table also identifies the 95th UCL of the mean value computed for the soil data set based on EPA's ProUCL methodologies.

Table 1
Comparison of Measured Soil Concentrations at SEAD-121C to Soil Cleanup Objective Criteria

Hazardous Substance	95th UCL of the Mean (mg/Kg)*	NYSDEC Industrial Use (mg/Kg)*	Region IX Industrial Soil PRGs (mg/Kg)*
Benzene	0.18	89	1.4
Ethylbenzene	2.44	780	400
Benzo(a)anthracene	1.91	11	2.1
Benzo(a)pyrene	1.99	1.1	0.21
Benzo(b)fluoranthene	2.64	11	2.1
Benzo(k)fluoranthene	1.38	110	21
Chrysene	1.83	110	210
Dibenz(ah)anthracene	0.31	1.1	0.21
B(a)P Toxicity Equiv.	2.66	NA	NA
4,4`-DDD	0.006	180	10
4,4`-DDE	0.015	120	7
4,4`-DDT	0.015	94	7
Aldrin	0.004	1.4	0.1
Aroclor-1254	0.13	25	21
Aroclor-1260	0.03	25	21
Dieldrin	0.007	2.8	0.11
Endrin	0.004	410	1800
Arsenic	5.69	16	1.6
Barium	400	10000	67000
Cadmium	9.9	60	450
Chromium	27.0	6800	100000
Copper	1575	10000	41000
Lead	2278	3900	800
Mercury	0.11	5.7	NA
Nickel	44.3	10000	20000
Silver	3.6	6800	5100
Zinc	800	10000	100000

Key: * mg/Kg = milligrams per Kilogram; NA = Not Available

Forty-eight (48) surface soil (0 – 0.2 ft), 10 ditch soil (0 – 2 ft.) and 20 subsurface soils (> 2 ft.) were collected and analyzed as part of the investigation of soil at SEAD-121C. Soil samples showed levels of two volatiles organic compounds, six cPAHs, six pesticides, two PCBs, and 14 metals that exceeded various Federal or State comparative values.

Generally, only trace levels of volatile organic compounds were found in soil samples at SEAD-121C. Concentrations noted for several of the identified compounds were consistent with laboratory contaminant levels. Benzene and ethylbenzene were both found in a single subsurface sample at elevated concentrations.

The cPAHs were found in all soils evaluated (i.e., surface, subsurface, and ditch), but the higher concentrations were generally detected in the surface soils. The highest concentrations of cPAH compounds, including predominantly benzo(a)pyrene were found in three portions of the site: at one location north of Building 316 immediately next to the southern end of the earthen bottom storage cell that are located in this portion of the AOC; at three locations exterior to the yard along the southern edge of 1st Street in close proximity to the southern man-made drainage culvert; and, at one surface soil location halfway along the northwestern boundary fence that separates the DRMO Yard from the abutting drainage ditch. The concentration of benzo(a)pyrene measured in each of these samples exceeded its Industrial Use reference value, while the concentration of benzo(b)fluoranthene found in the sample along the northwestern boundary fence was also above its Industrial Use reference value. A visual inspection of the location north of Building 316 indicates that there are pieces of broken up asphalt intermixed with the soil at the southern end of the storage cells north of Building 316. This sample location is also between two railroad tracks. The three locations located along 1st Street are outside and upgradient of the DRMO Yard and its activities. The elevated results found in these samples are reflective of background concentrations that result from stormwater runoff from the upgradient PID and Warehousing area, and the adjacent road. A visual inspection of the sample location along the northwestern boundary fence suggests that the data is anomalous, as there is no difference in any of the soil noted in this area versus others collected in the DRMO Yard that show lower concentrations.

The highest concentrations of metals were generally collocated in surface soil samples collected from locations in the northern-most and southwestern corners of the former yard, where scrap metal collection areas were previously located. Metal species identified at the yard that could pose potential risks to human health included arsenic, copper, iron, and lead; subsequent risk

assessments indicated that potential risks were within EPA's acceptable range.

During the summer of 2007, a soil removal action was performed to remove lead contaminated soil that had been identified in the northern end of the DRMO Yard. Locations where elevated cPAH compound concentrations were not addressed for the reasons noted above. Confirmatory samples were collected and analyzed for total lead only. The results of the confirmatory analyses indicate that the remaining soils at SEAD-121C achieved the defined cleanup objectives (i.e., for lead, 95th UCL less than 1,250 mg/Kg, with no individual sample concentration in excess of 1,500 mg/Kg). **Table 2** below summarizes the residual levels of lead that now remains at SEAD-121C versus comparative cleanup objectives.

Table 2
Comparison of Measured Soil Concentrations at SEAD-121C to Soil Cleanup Objective Criteria

Hazardous Substance	95th UCL of the Mean (mg/Kg)*	NYSDEC Industrial Use (mg/Kg)*	Region IX Industrial Soil PRGs (mg/Kg)*
Pre-Removal Action (see Table 1)			
Lead (complete AOC)	2278	3900	800
Post Removal Action			
Lead (complete AOC)	430.4	3900	800

Key: * mg/Kg = milligrams per Kilogram; NA = Not Available

Groundwater Investigation

Two temporary groundwater monitoring wells (i.e., MW121C-1 and MW121C–2) were installed and sampled using bailers during the EBS in 1998. Four permanent monitoring wells were installed, and two rounds (i.e., February and May of 2003) of groundwater samples were collected and analyzed at three of the permanent wells (MW121C-3, MW121C-4, and MW121C-6) using low flow sampling techniques during the RI. Samples could not be collected from the fourth permanent monitoring well (i.e., MW121C-5) during either of the 2003 sampling events because the well was found to be dry. Data collected during the EBS is considered suspect because bailers were used. Sampling with bailers is a more aggressive technique that stirs up silt and soil that is commonly found in wells, and which can lead to false positive results for many compounds, especially metals..

Groundwater data developed for SEAD-121C was compared to Federal and State criteria including New York State Class GA Groundwater Standards, Federal Maximum Contaminant Levels (MCLs), and EPA Region IX PRGs for Tap Water. The Federal MCLs and the Region IX PRGs are considered TBC criteria because they pertain specifically to drinking water, and the groundwater at SEAD-121C is not used as a source of drinking water at the Depot. There is a separate municipal water distribution system within the PID Area. The results of the groundwater sampling at SEAD-121C are presented in **Table 3**, below.

Table 3
Comparison of Measured Groundwater Concentrations at SEAD-121C and Cleanup Objectives

Hazardous Substance	EBS Maximum Groundwater Concentration (µg/L)*	RI Maximum Groundwater Concentration (µg/L)*	NYSDEC GA Groundwater Standard (µg/L)*	Federal MCL Standard (µg/L)	EPA Region IX PRG for Tap Water (µg/L)*	Maximum Seneca Background Concentration (µg/L)*
1,2-Dichloro-Benzene	36	ND	3	0.6	370	NA
4,4'-DDD	0.81	ND	0.3	NA	0.28	NA
4,4'-DDE	0.3	ND	0.2	NA	0.2	NA
4,4'-DDT	0.56	ND	0.2	NA	0.2	NA
Alpha-BHC	0.059	ND	0.1	NA	0.011	NA
Beta-BHC	0.33	ND	0.04	NA	0.037	NA
Delta-BHC	0.16	ND	0.04	NA	NA	NA
Dieldrin	0.2	ND	0.004	NA	0.0042	NA
Heptachlor	0.14	ND	0.04	0.4	0.015	NA
Heptachlor epoxide	0.11	ND	0.03	0.2	0.0074	NA
Aluminum	5350	588	NA	NA	36000	42400
Antimony	NA	8.4	3	6	15	52.7
Iron	5620	869	300	NA	11000	69400
Manganese	1365	297	300	NA	880	1120
Sodium	95200	58400	20000	NA	1200000	59400

Key: µg/L = micrograms per Liter; NA = Not Available; ND = Not Detected.

Volatile organic compounds (VOCs), pesticides and polychlorinated biphenyls (PCBs) were not detected in groundwater samples characterized during the RI sampling program. Two semivolatile organic compounds (SVOCs) were detected in groundwater samples collected during the RI, but neither was found at a concentration above any comparative criteria.

Nineteen (19) metals were detected in samples collected from the permanent wells at SEAD-121C during the RI. Aluminum, antimony, iron, manganese, and sodium exceeded their respective comparative criteria in at least two of the six groundwater samples characterized during the RI sampling events.

Surface Water Investigation

No permanent surface water body is located within the bounds of SEAD-121C. Drainage ditches are located exterior to the AOC, along its southern and northwestern bounds. The man-made drainage ditches convey storm and snow-melt runoff waters away from land located within the SEDA's former administrative, maintenance and warehousing areas, which are located to the north-northeast, east, and south-southeast of SEAD-121C, to Kendaia Creek that is located to the west. Surface water flow in the abutting drainage ditches is an episodic event; thus, there is no NYSDEC designation assigned to surface water (i.e., runoff) found in the channels. For comparative purposes, analytical results compiled for surface water samples were compared to New York State's Class C AWQSs and to the EPA's Region IX PRGs for Tap Water. The results of this comparison are shown in **Table 4**.

Surface water samples were collected from 10 locations during the SEAD-121C RI; nine of these samples were collected exterior to SEAD-121C, while the last was collected from a puddle within the AOC that accumulated after a storm event.

Table 4
Comparison of Measured Surface Water Concentrations at SEAD-121C and Cleanup Objectives

Hazardous Substance	Maximum Surface Water Concentration (µg/L)*	NYSDEC Class C Surface Water Standard (µg/L)*	EPA Region IX PRG for Tap Water (µg/L)*
Bis(2-ethylhexyl)phthalate	4.2	0.6	4.8
Aluminum	8760	100	36000
Arsenic	50.3	150	0.045
Barium	423	NA	2600
Beryllium	0.86	1100	73
Cadmium	19.5	3.84	18
Calcium	166000	NA	25000
Chromium	129	139.45	110
Cobalt	47	5	730
Copper	1160	17.32	1500
Iron	110000	300	11000
Lead	839	1.46	15
Magnesium	26200	NA	40000
Manganese	2380	NA	880
Mercury	2.1	0.0007	11
Nickel	154	99.92	730
Potassium	5350	NA	700000
Selenium	4.6	4.6	180
Silver	8	0.1	182
Sodium	123000	NA	1200000
Thallium	6.3	8	2.4
Vanadium	233	14	36
Zinc	6910	159.25	11000

Key: µg/L = micrograms per liter; NA = Not Available; ND = Not Detected.

Neither VOCs nor pesticides/PCBs were detected in any of the surface water samples collected in or near SEAD-121C. The SVOC bis(2-ethylhexyl)phthalate was detected in one sample collected from a location that is upgradient of, exterior to, and southwest of the AOC. The reported concentration of 4.2 µg/L exceeds New York's Class C AWQS, but is less than Region IX's PRG for Tap Water.

Twenty-two metals were detected in surface water samples collected from the vicinity of the DRMO Yard. Of the 22 metals detected, 10 were detected in every sample analyzed, while two others (i.e., arsenic and selenium) were only observed in one sample each. Antimony was not detected in any surface water sample.

Eleven of the detected metals exceeded their respective Class C AWQS for surface water. Eight metals exceeded their respective Region IX PRGs for Tap Water.

SEAD-121I, Rumored Cosmoline Oil Disposal Area

Samples of surface soil, ditch soil and surface water were collected and analyzed as part of the EBS and RI at SEAD-121I, the Rumored Cosmoline Oil Disposal Area. The sampling and analyses were performed in 2002 and 2003; the results of this effort were reported in the *Remedial Investigation Report for Two EBS Sites in the Planned Industrial Development Area (SEAD-121C and SEAD-121I).* The combined analytical results of the EBS and the RI are summarized and discussed below.

Soil Investigations

Fifty-one (51) soil samples, including 12 ditch soil samples, 34 surface soil samples (i.e., 0 – 2 inches bgs) and five soil samples collected from soil borings, but from depths of less than 2 ft. bgs, were collected and analyzed as part of the investigation of soil at SEAD-121I. A summary of the soil data for SEAD-121I compared to pertinent criteria is provided in **Table 5**

Eight VOCs, including acetone, benzene, ethyl benzene, meta/para xylene, methyl ethyl ketone, methylene chloride, ortho xylene, and toluene, were detected in the 45 surface soil samples collected and analyzed from SEAD-121I. Acetone was the only VOC found at concentrations that are above normal laboratory contaminant levels.

Table 5
Comparison of Measured Soil Concentrations at SEAD-121I to Soil Cleanup Objective Criteria

Hazardous Substance	95th UCL of the Mean (mg/Kg)*	NYSDEC Restricted Commercial Use (mg/Kg)*	NYSDEC Restricted Industrial Use (mg/Kg)*	Region IX Industrial Soil PRGs (mg/Kg)*
Acetone	0.061	500	1000	54000
Benzo(a)anthracene	9.25	5.6	11	2.1
Benzo(a)pyrene	8.42	1	1.1	0.21
Benzo(b)fluoranthene	10.43	5.6	11	2.1
Benzo(k)fluoranthene	9.40	56	110	21
Chrysene	12.00	56	110	210
Dibenz(ah)anthracene	1.26	0.56	1.1	0.21
Indeno(123-cd)pyrene	4.47	5.6	11	2.1
B(a)P Toxicity Equiv.	13	NA	NA	NA
4,4`-DDE	0.014	62	120	7
4,4`-DDT	0.013	47	94	7
Aldrin	0.0059	0.68	1.4	0.1
Dieldrin	0.011	1.4	2.8	0.11
Endrin	0.0048	89	410	1800
Heptachlor epoxide		NA	NA	0.19
Antimony	3.3	NA	NA	410
Arsenic	26	16	16	1.6
Cadmium	2.5	9.3	60	450
Chromium	73	1500	6800	10000
Copper	65	270	10000	41000
Iron	21111	NA	NA	100000
Lead	54	1000	3900	800
Magnesium	11000	NA	NA	NA
Manganese	89533	10000	10000	19000
Mercury	0.039	2.8	5.7	NA
Nickel	96	310	10000	20000
Selenium	41	1500	6800	5100
Silver	2.4	1500	6800	5100
Thallium	45	NA	NA	67
Zinc	163	10000	10000	100000

Key: * mg/Kg = milligrams per Kilogram; NA = Not Available

Twenty-eight SVOCs, including mainly PAHs, cPAHs, and mixed phthalates were detected in the soil samples collected from SEAD-121I. Generally, the seven cPAH compounds were found most frequently. The seven cPAH compounds were also the only substances observed to exceed State or Federal comparative values. Three samples exhibited benzo(a)pyrene toxicity equivalent (BTE) concentrations in excess of NYSDEC's historic reference value of 10 mg/Kg.

Seven pesticides and two PCBs were detected in the soils at SEAD-121I. Five pesticides (i.e., 4,4`-DDE, 4,4`-DDT, aldrin, dieldrin and endrin) were found at concentrations that exceeded one of their respective comparative cleanup objectives.

Twenty-three metals were detected in the 45 soil samples collected in or around SEAD-121I. Thirteen metals (arsenic, antimony, cadmium, chromium, copper, iron, lead, manganese, mercury, nickel, selenium, silver, thallium, and zinc) were found at concentrations that exceeded one of their respective comparative cleanup criteria.

The metals exhibiting concentrations above comparative cleanup objective levels were generally located in close proximity to the historic ore piles. As such, the stockpiles are presumed to be the source of the elevated levels of these metals in the AOC soils.

Once the strategic stockpile mission was terminated at SEAD-121I, the Army cleaned up the former stockpile areas. During this effort, the former asphalt pads upon which the ore piles sat were excavated, as was an additional 6 to 12 inches of soil beneath and around the footprints of the piles. Confirmatory soil samples were collected and analyzed for iron and manganese only. The results of the confirmatory analyses indicate that the remaining soils at the stockpile locations achieved the defined cleanup objectives (i.e., for iron, 95th UCL less than 100,000 mg/Kg; for manganese, 95th UCL less than 10,000 mg/Kg, and no individual sample concentration above 19,500 mg/Kg). **Table 6** below summarizes the residual levels of iron and manganese that now remain at SEAD-121I.

Groundwater Investigation

Groundwater was not encountered in any of the soil borings advanced at SEAD-121I. Each of these borings was terminated once the underlying bedrock surface was encountered. Therefore, groundwater was not evaluated as a media of concern at SEAD-121I.

Table 6
Comparison of Measured Soil Concentrations at SEAD-121I to Soil Cleanup Objective Criteria

Hazardous Substance	95th UCL of the Mean (mg/Kg)*	NYSDEC Restricted Commercial Use (mg/Kg)*	NYSDEC Restricted Industrial Use (mg/Kg)*	Region IX Industrial Soil PRGs (mg/Kg)*
Pre-Removal Action				
Iron	21111	NA	NA	100000
Manganese	89533	10000	10000	19000
Post Removal Action				
Iron (entire AOC)	18021	NA	NA	100000
Manganese (entire AOC)	2438	10000	10000	19000

Surface Water Investigation

Seven (7) surface water samples were collected and analyzed as part of the investigation of SEAD-121I.

Table 7
Comparison of Measured Surface Water Concentrations at SEAD-121I and Cleanup Objectives

Hazardous Substance	Maximum Surface Water Concentration (µg/L)*	NYSDEC Class C Surface Water Standard (µg/L)*	EPA Region IX PRG for Tap Water (µg/L)*
Aluminum	2050	100	36000
Iron	3410	300	11000
Lead	26.3	1.46	15
Zinc	190	159.25	11000

Key: µg/l = micrograms per liter; NA = Not Available; ND = Not Detected.

No VOCs or pesticide/PCB compounds were detected in the surface water samples collected for SEAD-121I. Two SVOCs (butylbenzylphthalate and fluoranthene) were detected in one surface water sample each at SEAD-121I. Neither of these values exceeded their respective cleanup objective levels (i.e., NYS Class C AWQS or Region IX PRGs for Tap Water).

Eighteen metals were detected in the surface water at SEAD-121I, of these 18, seven (i.e., aluminum, calcium, magnesium, manganese, potassium, sodium, and zinc) were found in every sample. Four of the identified metals [aluminum (3 times), iron (2 times), lead (4 times), and zinc (1 time)] exceeded their respective AWQS Class C standards; however, only lead was found at a concentration that exceeded its Region IX tap water cleanup objective.

Based on the data, the Army has concluded that hazardous substances do exist at both of the AOCs at concentrations above defined cleanup objectives and occasionally standards. There is no strong and direct correlation between the hazardous substances found in AOC-specific soils and groundwater as no definitive plumes have been identified at SEAD 121C, and no groundwater was encountered at SEAD-121I. There is some evidence that identified hazardous substances have been mobilized by overland flow of storm-event water.

Risk Assessment Methodology

Risk assessments are performed at sites where hazardous substances have been detected to identify if the concentrations of the species found will pose potential adverse threats to current or future human or ecological receptors if they are allowed to remain at the site. Risk assessments are inherently conservative, purposely biased to prompt an action if potential risk is identified.

Human health risk assessments follow a four-step process, which includes hazard identification, exposure assessment, toxicity assessment and risk characterization. These four steps are used to assess potential site-related human health risk for reasonable maximum exposure scenarios that do or could exist at the site if no action were taken to eliminate or mitigate them.

- Hazard Identification: Chemicals of Concern (COCs) in the various media at the site are identified and selected based on factors such as their toxicity, concentrations detected relative to regulatory standards and guidelines, frequency of occurrence, fate and transport in the environment, mobility, persistence and bioaccumulation.

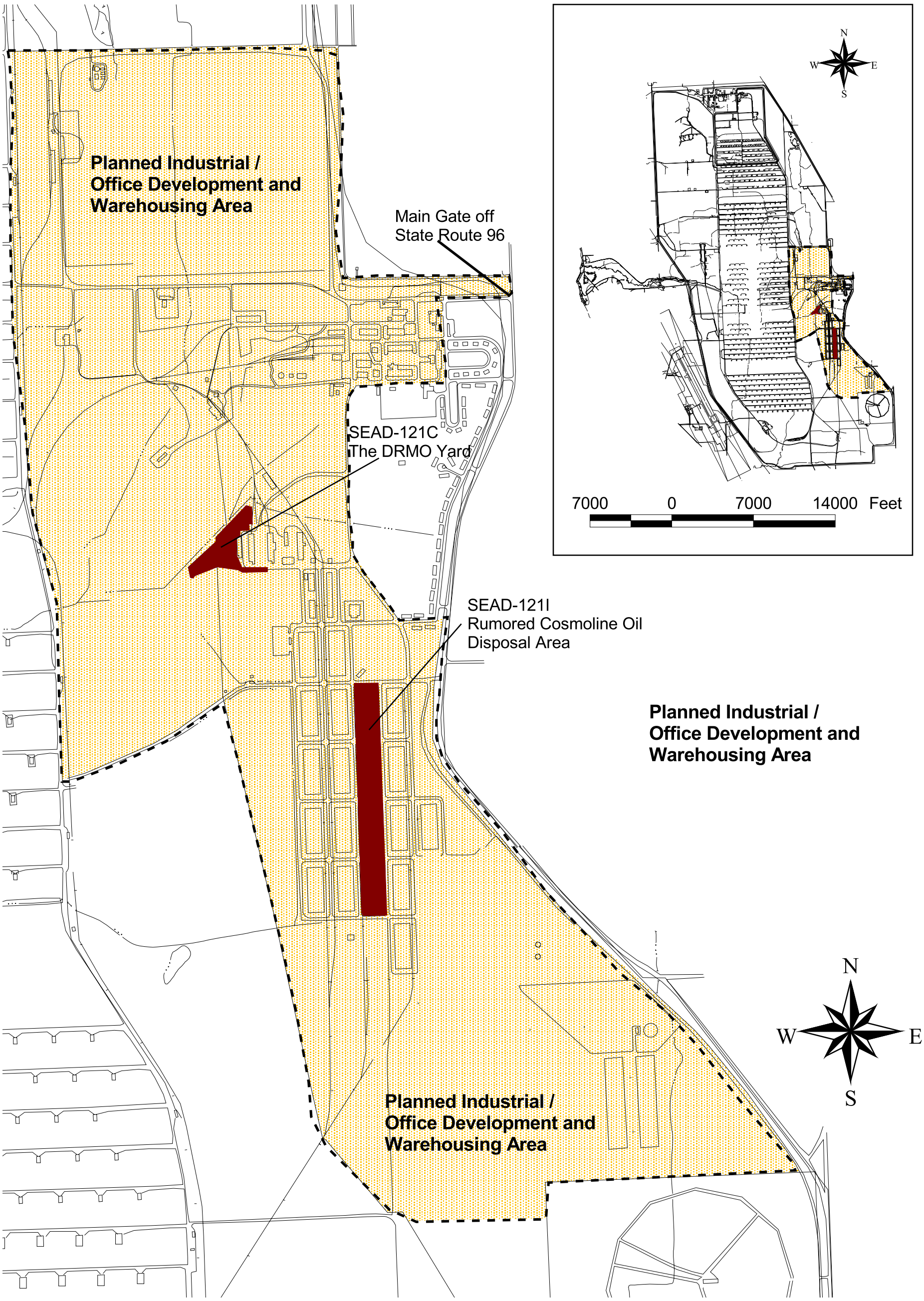
- Exposure Assessment: Different exposure pathways through which existing or future receptors might be exposed to the COCs are evaluated. Possible exposure pathways include ingestion, dermal contact, or inhalation. Factors relating to the exposure assessment include concentrations that receptors may encounter, and the duration and frequency of the potential exposure. The reasonable maximum exposure scenario is calculated to estimate the highest level that could be expected to occur at the site.

- Toxicity Assessment: The types of adverse effects associated with exposure to COCs, and the relationship between the magnitude of the exposure and the severity of potential effects are determined. Potential effects are COC-specific and may include risks of developing cancer or other changes in normal functions of organs (non-carcinogenic effects).

- Risk Characterization: The level of potential risk present is assessed by combining the outputs of the exposure and toxicity assessment components. Carcinogenic risks and non-carcinogenic hazards are estimated. Current guidelines for acceptable individual lifetime excess cancer risk are established as 1 in 10,000 to 1 in 100,000 or less (10^{-4} to 10^{-6}, or less). The non-cancer hazard, expressed as a “hazard index” (HI), represents the sum of individual exposure levels to corresponding reference doses. A non-cancer HI threshold level of less than 1 is set as the reference point.

Screening-Level Ecological Risk Assessments (SLERAs) are conservative assessments that provide a high level of confidence in determining a low probability of adverse risk, and they incorporate uncertainty in a precautionary manner. The purpose of the SLERA is to assess the need, and if necessary, the level of effort necessary to conduct a detailed, baseline ecological risk assessment for a site. Principal components of the SLERA are the Screening-Level Problem Formulation and Ecological Effects Evaluation, Screening-Level Exposure Estimate and Risk Calculation, and the Scientific Management Decision Point (SMDP) with four possible decisions:

- There is adequate information to conclude that ecological risks are negligible and therefore there is no need for remediation on the basis of ecological risks;
- The information is not adequate to make a decision at this point and the ERA process should continue to a baseline ERA;
- The information indicates a potential for adverse ecological effects, and a more thorough assessment is warranted; or



SEAD 121C and SEAD 121I .

Area Covered by PID-wide Land Use Restrictions
- Prohibit the development and use of property for residential housing, elementary and secondary schools, childcare facilities and playgrounds.
- Prevent access to or use of the groundwater until the Class GA Groundwater Standards are met.

PARSONS

SENECA army DEPOT ACTIVITY
PROPOSED PLAN - SEADs 121C & 121I

FIGURE 1
SEDA SITE MAP and
LOCATION OF SEADs 121C &121I

November 2007

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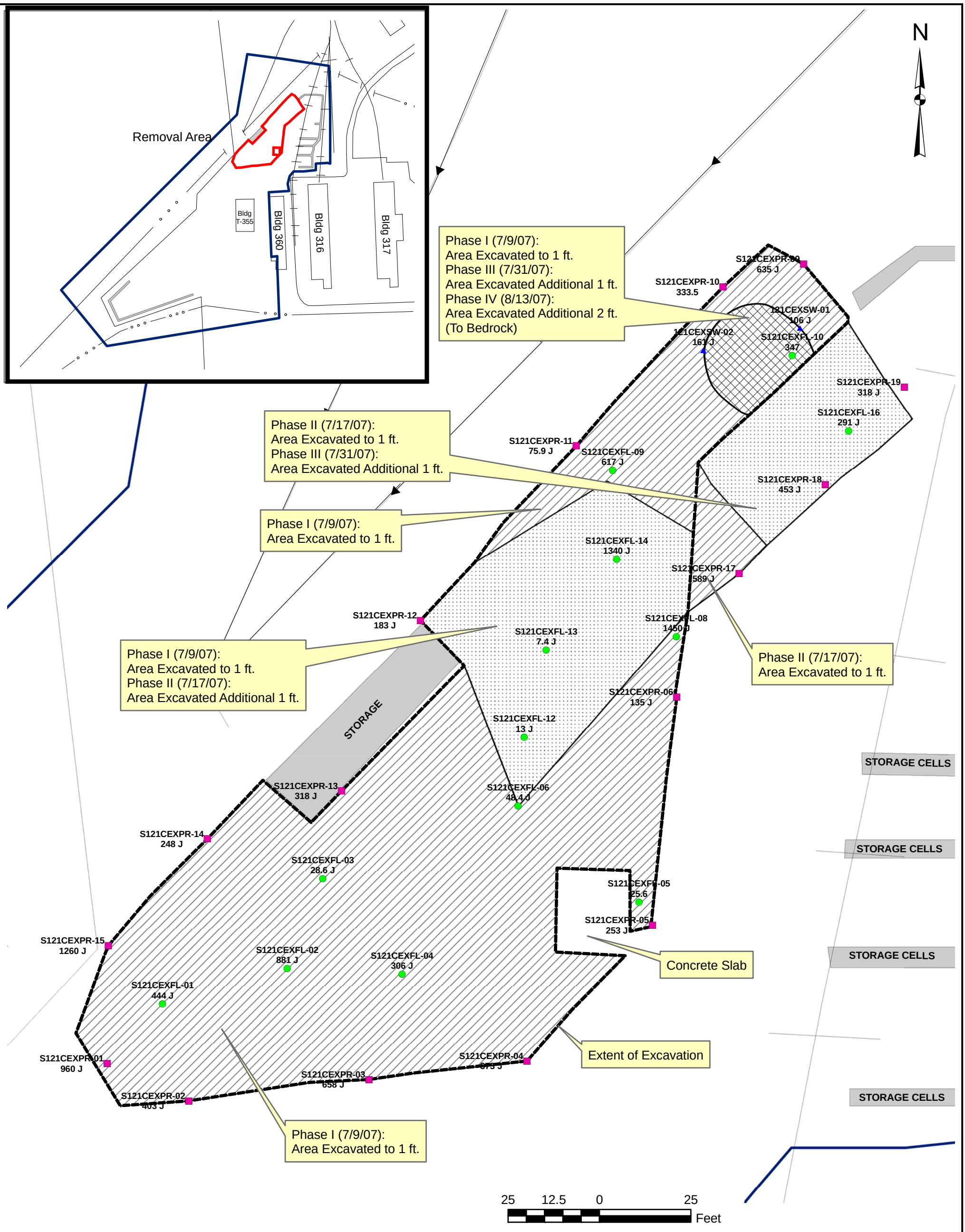

LEGEND:

- Railroad Tracks
- Site Boundary
- Surface Water
- Surface Water Flow Direction
- Final Excavation Depth = 1 FT
- Final Excavation Depth = 2 FT
- Final Excavation Depth = 4 FT
- Confirmatory Sidewall Sample Approximate Location with Lead Result in mg/Kg
- Confirmatory Floor Sample Approximate Location with Lead Result in mg/Kg
- Confirmatory Perimeter Sample Approximate Location with Lead Result in mg/Kg
- Limits of Initial Phase I Excavation

NOTE: When a field duplicate was collected, the concentration presented is an average of the results from the sample and its associated duplicate.

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SENECA ARMY DEPOT ACTIVITY

SEAD-121C & 121I Proposed Plan

FIGURE 2
SEAD-121C
EXCAVATION AREA & FINAL
CONFIRMATORY SAMPLE LOCATIONS

Job #: 741172-02300 | Date: OCTOBER 2007

N

Building 331
Avenue C
Avenue D
Avenue E
Building 343
Fourth Street
Building 325
Building 330
Buiding 342
Fifth Street
Building 326
Building 329
Building 341
Sixth Street
Avenue A
Avenue B
Building 327
Building 328
Seventh Street

Phase II Excavation to 1 ft.
Pile 2 Excavation Area
Phase I Excavation to 1 ft.
Phase II Excavation to Bedrock
Phase I Excavation to 1 ft.
Phase II Excavation to 1 ft.
Phase I Excavation to 1 ft.
Phase I Excavation to 1 ft.
Phase II Excavation to Bedrock
Pile 1 Excavation Area

SS121I-6 24500 880
121IEXFL-06 13200 11100
121IEXPR-08 23000 2960
121IEXFL-09 10700 1120
SS121I-24 6100 406
121IEXFL-07 15000 4240
SS121I-20 19400 779
121IEXFL-10 10450 1620
121IEXPR-14 31300 2140
121IEXPR-15 27750 1393
121IEXFL-08 16400 944
121IEXPR-17 20300 2900
SS121I-8 15100 567
SS121I-13 12500 2650
SS121I-14 26100 2340
121IEXFL-01 23800 3360
121IEXFL-04 20700 1550
121IEXPR-02 16400 1900
SS121I-26 8350 1230
121IEXFL-02 19200 1690
SS121I-22 11800 557
121IEXFL-05 25100 1330
121IEXFL-12 15100 1030
121IEXPR-03 22700 1690
SS121I-16 24400 442

200 100 0 200
Feet

LEGEND:

- Railroad Tracks
- Site Boundary
- Surface Water
- Surface Water Flow Direction
- Phase I Excavation Area
- Phase II excavation Area
- RI Surface Soil Location with Iron and Manganese Concentrations (mg/Kg)
- Approximate Final Confirmatory Sample Location with Iron and Manganese Concentrations (mg/Kg)

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SENECA ARMY DEPOT ACTIVITY

SEAD-121C & 121I Proposed Plan

FIGURE 3
SEAD-121I
EXCAVATION AREA & FINAL CONFIRMATORY SAMPLE LOCATIONS

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